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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,128	01/20/2004	Yasuo Arishima	04558/081001	8831

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EXAMINER	
CHUO, TONY SHENG HSIANG	
ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 09/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/761,128	ARISHIMA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Tony Chuo	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 July 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Claims 1-18 are currently pending. Claims 1-18 do not overcome the previously stated 103 rejections. Therefore, claims 1-18 stand rejected under the following 103 rejections.

### ***Drawings***

2. The drawings filed on 1/20/04 are accepted by the examiner.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 6-13, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motomura et al (JP 2002-015743) in view of Mizuno (US 2001/0049047). The Motomura reference teaches an electric power generating element for a fuel cell comprising: a cathode layer "3" that is the positive electrode; an anode layer "6" that is the negative electrode; a solid electrolyte "PEM" between the positive and negative electrode; wherein the positive electrode "3" comprises a laminate of two electrode layers "1" & "2" where each electrode layer is 1 to 50  $\mu\text{m}$  (See Drawing

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1 and paragraphs [0027] & [0046]. It also teaches each catalyst layer "1" & "2" containing a mass per unit electrode area of  $0.6 \text{ mg/cm}^2$  (See paragraph [0069]). It also teaches a cathode catalyst layer "3" with a similar thickness as the anode catalyst layer "6" since both layers are formed by similar catalyst bed formation ink (See paragraph [0047]). If the anode catalyst layer and cathode catalyst layer are both  $20 \text{ }\mu\text{m}$  and the electrolyte film is  $50 \text{ }\mu\text{m}$ , then the laminate would have a total thickness of  $90 \text{ }\mu\text{m}$  (See paragraph [0069] & [0071]). However, the reference does not expressly teach an adhesive layer that is disposed between the catalyst layers that has proton conducting property and is similar to the polymer in the catalyst layer. The Mizuno reference teaches a Nafion solution of proton conducting solid polymer that functions as an adhesive to bond the layers of the fuel cell together (See paragraph [0048]). In addition, the adhesive is also similar to the ion exchange resin that is in the catalyst layer. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Motomura fuel cell to include a proton conducting polymer adhesive layer in between the two catalyst layers in order to securely bond the catalyst layers together during the course of hardening. As a result of laminating the catalyst layers with the polymer adhesive, the polymer adhesive would be present more in an interface part of each of the electrode layers than in an inner part in order to maximize the active areas of the electrodes.

5. Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motomura et al (JP 2002-015743) in view of Mizuno (US 2001/0049047) as applied to claims 1-4, 6-13, and 15-18. However, the references do not expressly teach an

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adhesive layer that has a thickness of 1 to 5  $\mu\text{m}$ . However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an adhesive layer that has a thickness of 1 to 5  $\mu\text{m}$  because result-effective variables were held to be obvious (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)). The thickness of the adhesive layer is a result of forming a conductive polymer layer.

### ***Response to Arguments***

6. Applicant's arguments filed 7/25/06 have been fully considered but they are not persuasive. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The applicant argues that Mizuno neither teach nor suggest laminating at least two electrode with Nafion to form a positive or negative electrode. It is noted that the two electrode layers according to claims 1, 7, and 10 do not have to be two catalyst layers. One electrode layer can be a catalyst layer and the other electrode layer can be a gas diffusion layer. The Mizuno reference teaches a Nafion solution that functions as an adhesive in bonding the catalyst layer that is on the electrolyte film to each gas diffusion layer. Therefore, Mizuno meets the limitations of claims 1, 7, and 10.

The applicant also argues that Mizuno could not inherently teach that the polymer material is present more in the interface part of each of the electrode layers

than in the inner part. It is noted that Figure 2 of the Mizuno reference shows a polymer adhesive material "29" that is present more in an interface part of each of the electrode layers than in the inner part. It is implicit from the teaching of Mizuno that the electrolyte film "21" has catalyst layers on each side. Therefore, the polymer adhesive would be present more on the interface part of each catalyst layer than the inner part. In addition, the adhesive would also be more on the interface part of the electrode than the inner part in order to maximize the active area of the electrode.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC



RAYMOND ALEJANDRO  
PRIMARY EXAMINER